AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Currently Amended) A process for making a porous catalyst, comprising

(a) providing an aqueous solution containing a nanoparticle precursor;

(b) forming a composition containing nanoparticles;

(c) adding a first catalytic precursor and a pore-forming agent to the composition containing nanoparticles and allowing the first catalytic precursor, the pore-forming agent, and the nanoparticles to form a ~~clear~~ solution wherein the first catalytic precursor is a metal salt and wherein the metal salt comprises ammonium metavanadate, ammonium metatungstate, vanadium, niobium, tantalum, rhenium, rhodium, rubidium, cobalt, iron, manganese, molybdenum, or combinations thereof;

(d) air drying the ~~clear~~ solution at about room temperature so as to allow an organic-inorganic material gel structure to form; and

(e) removing the pore-forming agent from the organic-inorganic structure so as to yield a porous catalyst.

2. (Canceled)

3. (Currently Amended) The process according to claim 1, wherein the pore-forming agent is an anionic surfactant, a zwitterionic surfactant, or combinations thereof.

4. (Currently Amended) The process according to claim 1, wherein (b) and (c) are performed concurrently.

5. (Currently Amended) The process according to claim 1_a wherein the nanoparticles are nanoparticles of a metal or metal oxide.

6. - 8. (Canceled)

9. (Currently Amended) The process according to claim 1_a wherein the porous catalyst comprises nanoparticles coated with a first catalytic component layer, wherein the first catalytic component layer is amorphous.

10. (Currently Amended) The process according to claim 1_a wherein the porous catalyst comprises nanoparticles coated with a first catalytic component layer, wherein the surface density of the first catalytic component layer is greater than 4 molecules per nm^2.

11. (Currently Amended) The process according to claim 1_a wherein the first catalytic component is non-crystalline in the porous catalyst.

12. (Currently Amended) The process according to claim 1_a wherein the first catalytic precursor is at least partially polymerized in the porous catalyst.

13. - 18. (Canceled)

19. (Previously Presented) The process according to claim 1, wherein the nanoparticles comprise zirconium oxide nanoparticles, titanium oxide nanoparticles, aluminum oxide nanoparticles, silicon oxide nanoparticles, or combinations thereof.

20. (Canceled)

21. (Previously Presented) The process according to claim 1, wherein the pore-forming agent comprises an ethylene oxide block copolymer.

22. (Previously Presented) The process according to claim 1, wherein the pore-forming agent comprises a non-ionic poly(ethylene oxide)-poly(propylene oxide)-poly(ethylene oxide) triblock copolymer.

23. (Previously Presented) The process according to claim 22, wherein the pore-forming agent comprises $EO_{20}PO_{70}EO_{20}$, $EO_5PO_{70}EO_5$, $EO_{106}PO_{70}EO_{106}$, $EO_{17}PO_{60}EO_{17}$, or combinations thereof.

24. (Previously Presented) The process according to claim 1, wherein the pore-forming agent comprises hexadecyl trimethyl ammonium, cetyl trimethyl ammonium bromide, or combinations thereof.

25. (Previously Presented) The process according to claim 1, wherein the nanoparticles are zirconium oxide nanoparticles, the first catalytic component or precursor thereof comprises

tungsten, and the pore-forming agent comprises $EO_{20}PO_{70}EO_{20}$, $EO_5PO_{70}EO_5$, $EO_{106}PO_{70}EO_{106}$, $EO_{17}PO_{60}EO_{17}$, or combinations thereof.

26. (Previously Presented) The process according to claim 1, wherein the nanoparticles are zirconium oxide nanoparticles or aluminum oxide nanoparticles, the first catalytic precursor comprises tungsten or vanadium, and the pore-forming agent comprises $EO_{20}PO_{70}EO_{20}$, $EO_5PO_{70}EO_5$, $EO_{106}PO_{70}EO_{106}$, $EO_{17}PO_{60}EO_{17}$, or combinations thereof.

27. (Previously Presented) The process according to claim 1, wherein (e) comprises calcining the organic-inorganic structure to remove the pore-forming agent.

28. (Previously Presented) The method of claim 1 further comprising impregnating the porous catalyst with a second catalytic precursor, a non-surfactant polymer, or combinations thereof.

29. (Currently Amended) The process according to claim 1, wherein the gel is formed by hydrolyzing and condensing a metal alkoxide, a metal salt, or combinations thereof, and wherein the addition of the first catalytic precursor and the pore-forming agent to the composition does not result in precipitation.

30. (Currently Amended) A process comprising:

forming a gel comprising a plurality of nanoparticles, wherein at least some of the nanoparticles have a diameter of two nanometers;

adding a catalyst precursor to the gel, wherein the catalyst precursor is a metal salt and wherein the metal salt comprises ammonium metavanadate, ammonium metatungstate, vanadium, niobium, tantalum, rhenium, rhodium, rubidium, cobalt, iron, manganese, molybdenum, or combinations thereof;

adding a porogen to the gel;

drying the gel, the catalyst precursor, and the porogen, thereby forming a dried gel; and

removing the porogen from the dried gel, thereby forming a porous catalyst.

31. (Currently Amended) The process according to claim 30, wherein the porogen is anionic or zwitterionic.

32. (Currently Amended) The process according to claim 31, wherein the composition is formed without precipitation.

33. (Currently Amended) A process comprising:

forming a gel comprising a plurality of nanoparticles;

adding a catalyst precursor to the gel, wherein the catalyst precursor is a metal salt and wherein the metal salt comprises ammonium metavanadate, ammonium metatungstate, vanadium, niobium, tantalum, rhenium, rhodium, rubidium, cobalt, iron, manganese, molybdenum, or combinations thereof;

adding a porogen to the gel, wherein the porogen is anionic;

drying the gel, the catalyst precursor, and the porogen, thereby forming a dried gel; and

removing the porogen from the dried gel, thereby forming a porous catalyst.

34. (Currently Amended) The process according to claim 33, wherein at least some of the nanoparticles have a diameter of two nanometers.

35. (Currently Amended) The process according to claim 33, wherein the gel is formed by hydrolyzing and condensing a metal alkoxide, a metal salt, or combinations thereof.

36. (New) A process for making a porous catalyst comprising;

(a) forming a composition containing the first catalyst comprising a metal nanoparticle;

(b) adding a second catalytic precursor comprising a metal salt and a pore-forming agent to the composition containing the first catalyst and allowing the second catalytic precursor, the pore-forming agent, and the first catalyst to form a solution;

(c) drying the solution so as to allow an organic-inorganic material gel structure to form; and

(d) removing the pore-forming agent from the organic-inorganic structure so as to yield a porous composition comprising two catalysts.

37. (New) The process according to claim 36, wherein the organic-inorganic material gel structure formed in (c) is an aerogel.

38. (New) The process according to claim 36, wherein the metal nanoparticle and the metal salt do not comprise the same metal.